

IN THE CLAIMS:

1-16. (Canceled)

1 17. (Currently Amended) A method of treatment of a rolling element bearing
2 component by hard particle abrasion including the steps of:

3 immersing the component in a receptacle containing hard abrasive particles; and

4 agitating the bearing component, hard particles or both to produce relative movement
5 therebetween and to improve the surface topography of the component for a period
6 substantially in excess of the period T_{opt} where:

7 $T_{opt} = - T \log_e(Ar - Dr) / (Ir - Dr)$

8 where:

9 T_{opt} a predetermined optimum and minimum process time necessary to achieve a desired
10 surface roughness

11 T is a time constant of the specific hard particle abrasion system applied

12 Ir is an initial average surface roughness

13 Dr is a minimum average surface roughness obtainable using the specific hard particle
14 abrasion system.

15 and until a residual compressive stress of between 200MPa and 500MPa is induced in
16 the surface of the component.

18. (Canceled)

1 19. (Previously Presented) A method according to claim 18 wherein the agitation is
2 performed for 30 minutes.

1 20. (Previously Presented) A method according to claim 17 wherein the relative
2 movement is produced by rotating the component in one direction while the receptacle is
3 rotated in the opposite direction.

1 21. (Previously Presented) A method according to claim 17 wherein the receptacle
2 rotates at between 30 rpm and 90rpm and the speed of rotation of the component is between
3 5rpm and 15rpm.

22. (Canceled)

1 23. (Previously Presented) A method according to claim 17 wherein the receptacle
2 also contains a fluid.

1 24. (Previously Presented) A method according to claim 23 wherein the fluid is
2 aqueous.

1 25. (Previously Presented) A method according to claim 24 wherein the fluid has a
2 corrosion inhibitor.

1 26. (Previously Presented) A rolling element bearing component in which the
2 component surface exhibits a residual compressive stress of between 200MPa and 500MPa
3 induced by a method according to claim 17.

1 27. (Previously Presented) A rolling element bearing component according to claim
2 26, wherein the surface finish of the component is improved from around 0.13 m to around
3 0.07 m.

1 28. (Previously Presented) A rolling element bearing comprising one or more
2 components according to claims 26 or 27.

1 29. (Previously Presented) Use of non-corrosive hard particle abrasion to treat a
2 rolling element bearing component, the hard particle abrasion including the steps of:

3 immersing the bearing component in a receptacle containing hard abrasive particles;
4 and

5 agitating the bearing component, hard abrasive particles or both to produce relative
6 movement there between to improve the surface topography of the component and to increase
7 the compressive stress in the surface of the component by between 200MPa and 500MPa.

1 30. (Previously Presented) A rolling element bearing component according to claim
2 17 wherein a surface finish component is produced which requires no further machining.